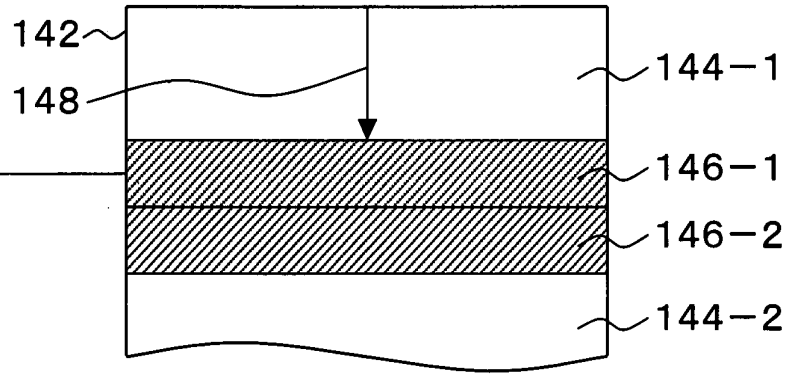
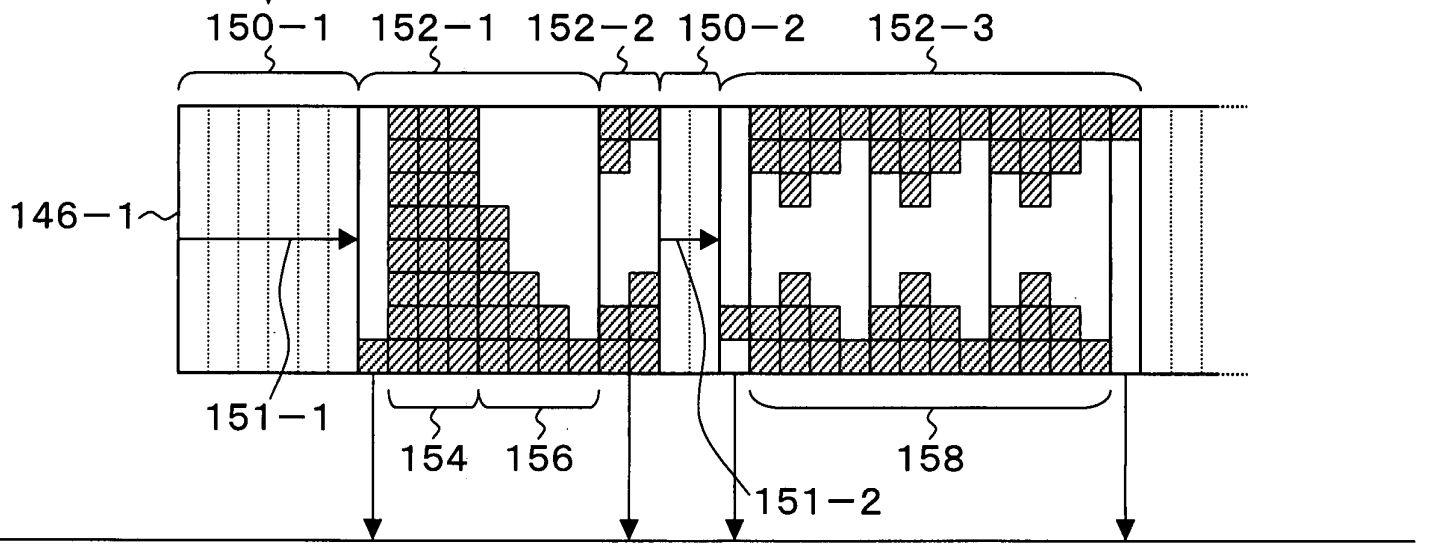
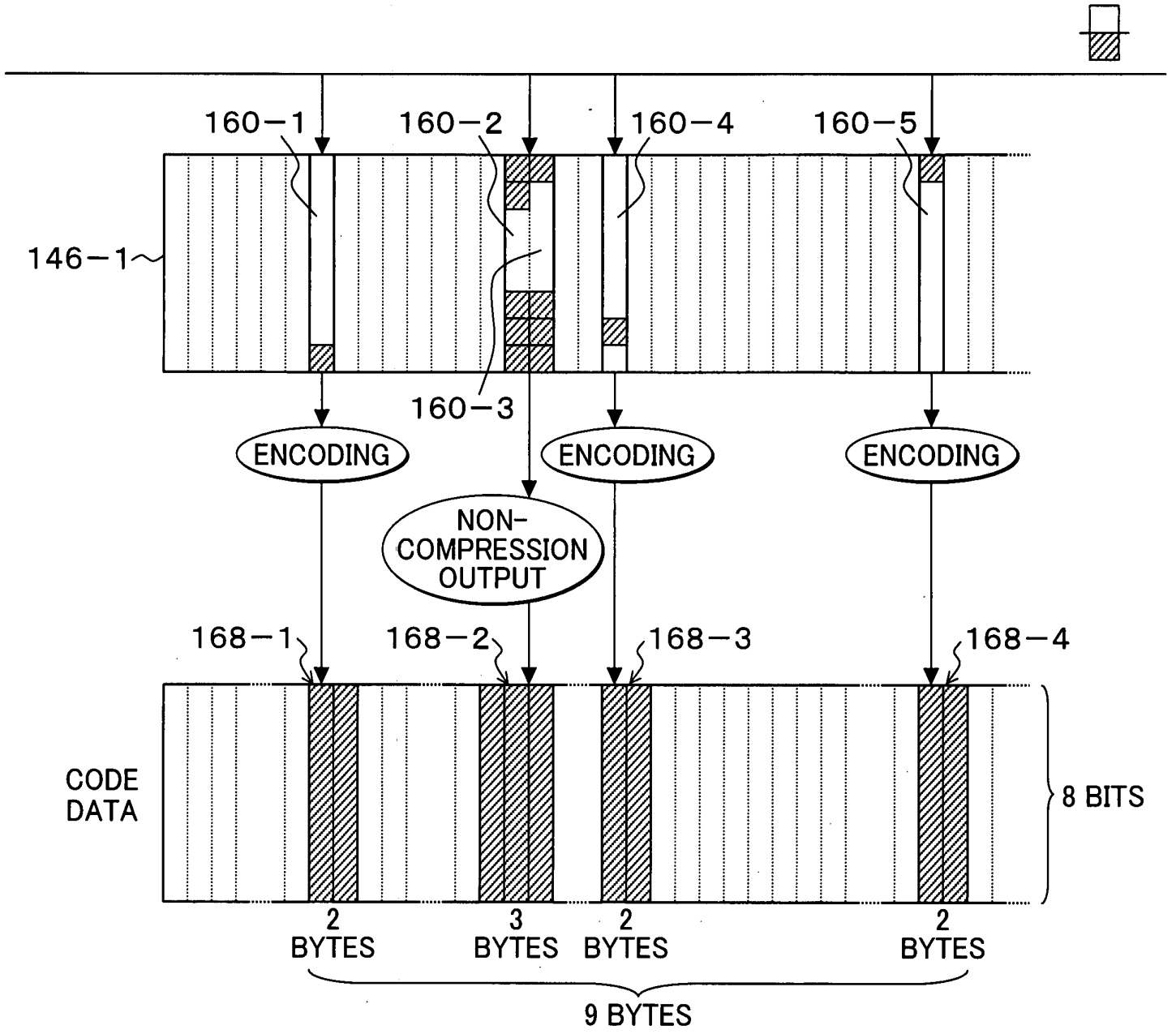
PRIOR ART
FIG. 1A



PRIOR ART
FIG. 1B



PRIOR ART
FIG. 1C



PRIOR ART
FIG. 1D

FIG. 2

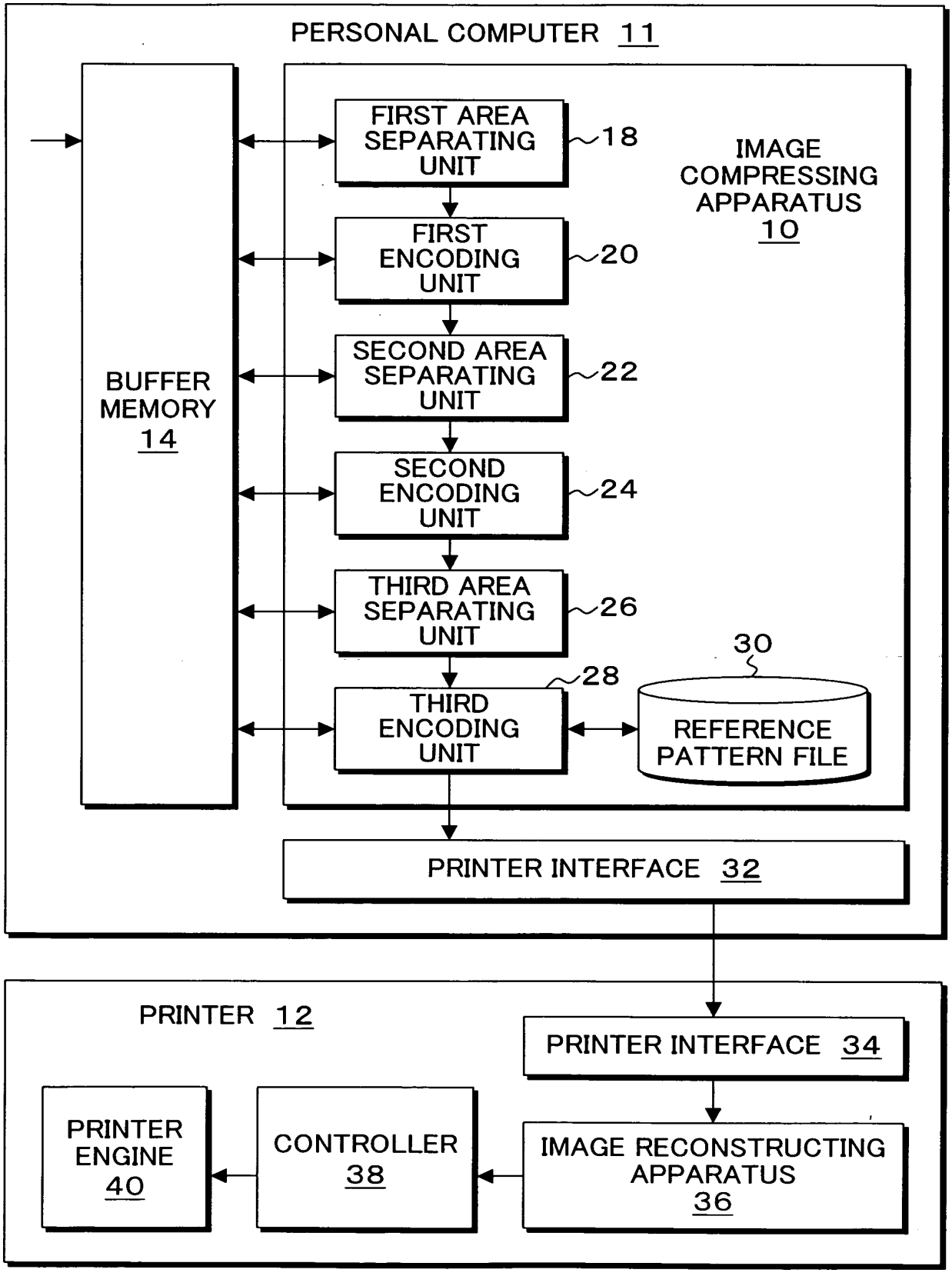
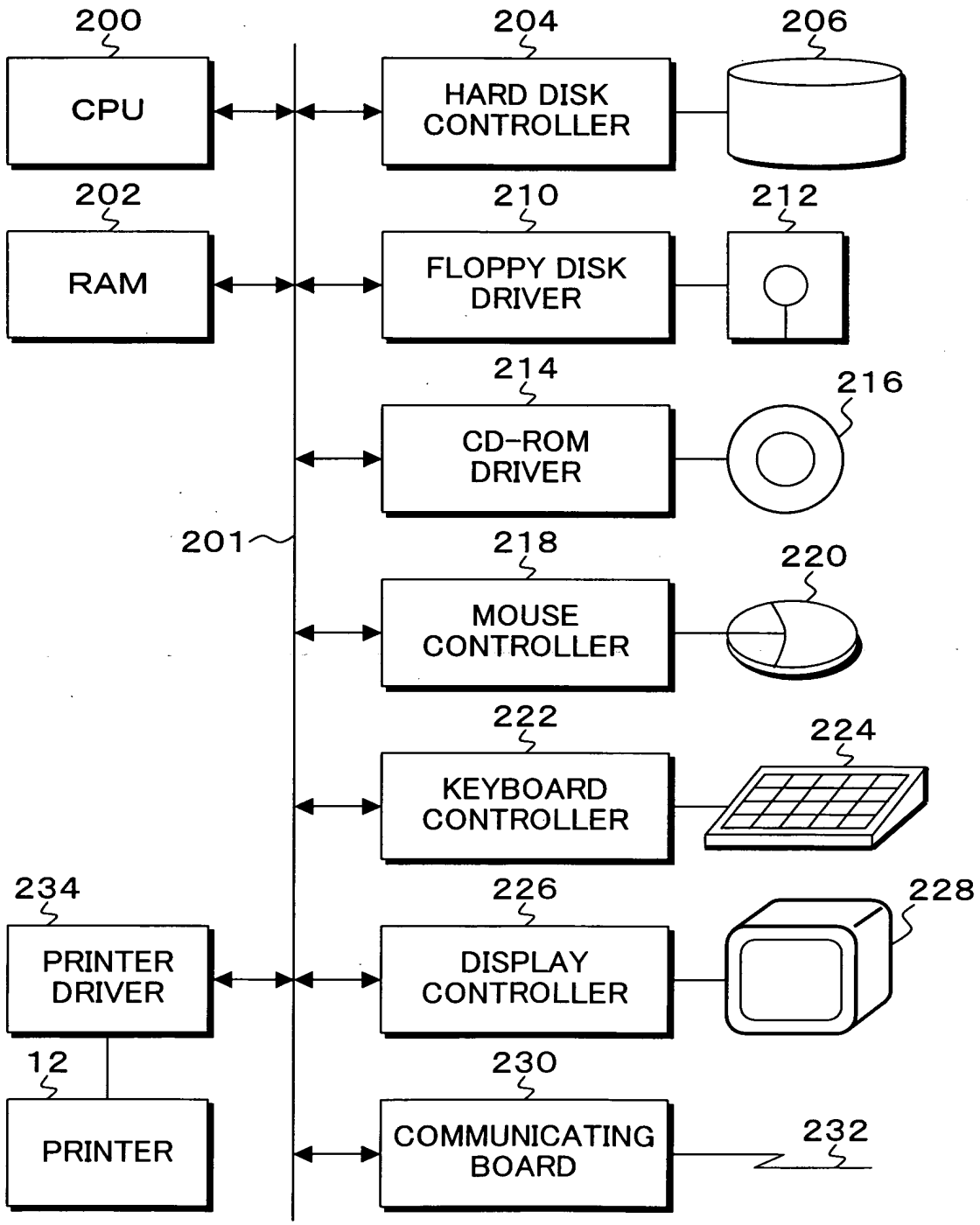

PERSONAL COMPUTER 11
BUFFER MEMORY 14
FIRST AREA SEPARATING UNIT
18
FIRST ENCODING UNIT
20
SECOND AREA SEPARATING UNIT
22
SECOND ENCODING UNIT
24
THIRD AREA SEPARATING UNIT
26
THIRD ENCODING UNIT
28
IMAGE COMPRESSING APPARATUS 10
30
REFERENCE PATTERN FILE
PRINTER INTERFACE 32
PRINTER 12
PRINTER INTERFACE 34
IMAGE RECONSTRUCTING APPARATUS 36
CONTROLLER 38
PRINTER ENGINE 40

FIG. 3


200
CPU
202
RAM
201
204
HARD DISK CONTROLLER
206
210
FLOPPY DISK DRIVER
212
214
CD-ROM DRIVER
216
218
MOUSE CONTROLLER
220
222
KEYBOARD CONTROLLER
224
234
PRINTER DRIVER
12
PRINTER
226
DISPLAY CONTROLLER
228
230
COMMUNICATING BOARD
232

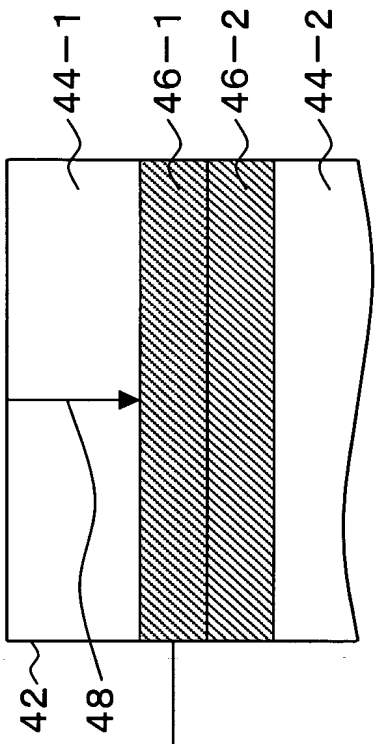


FIG. 4A

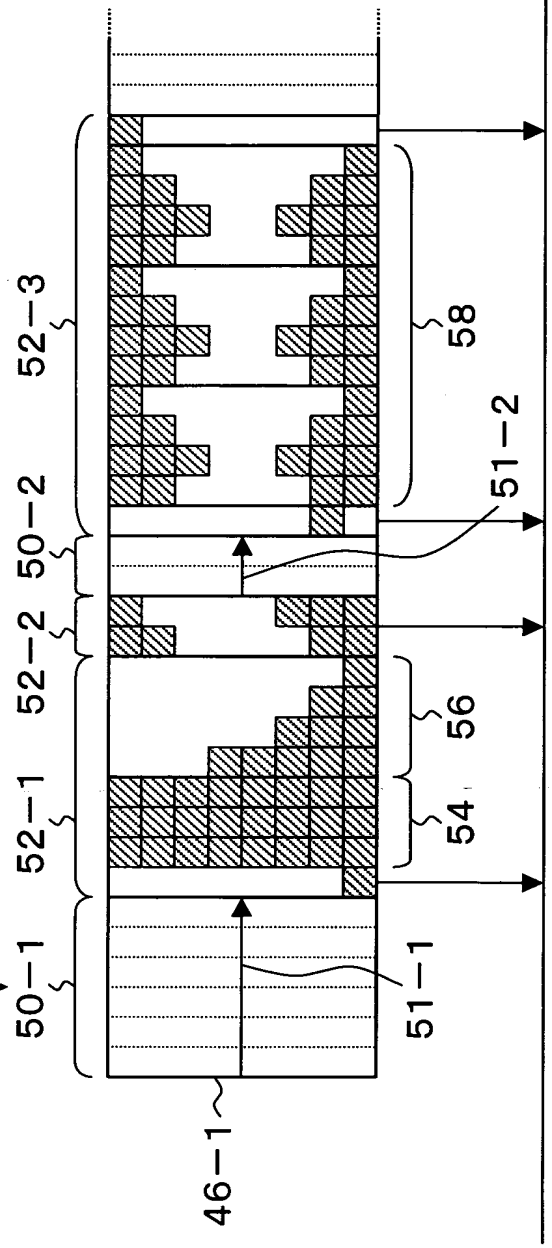


FIG. 4B

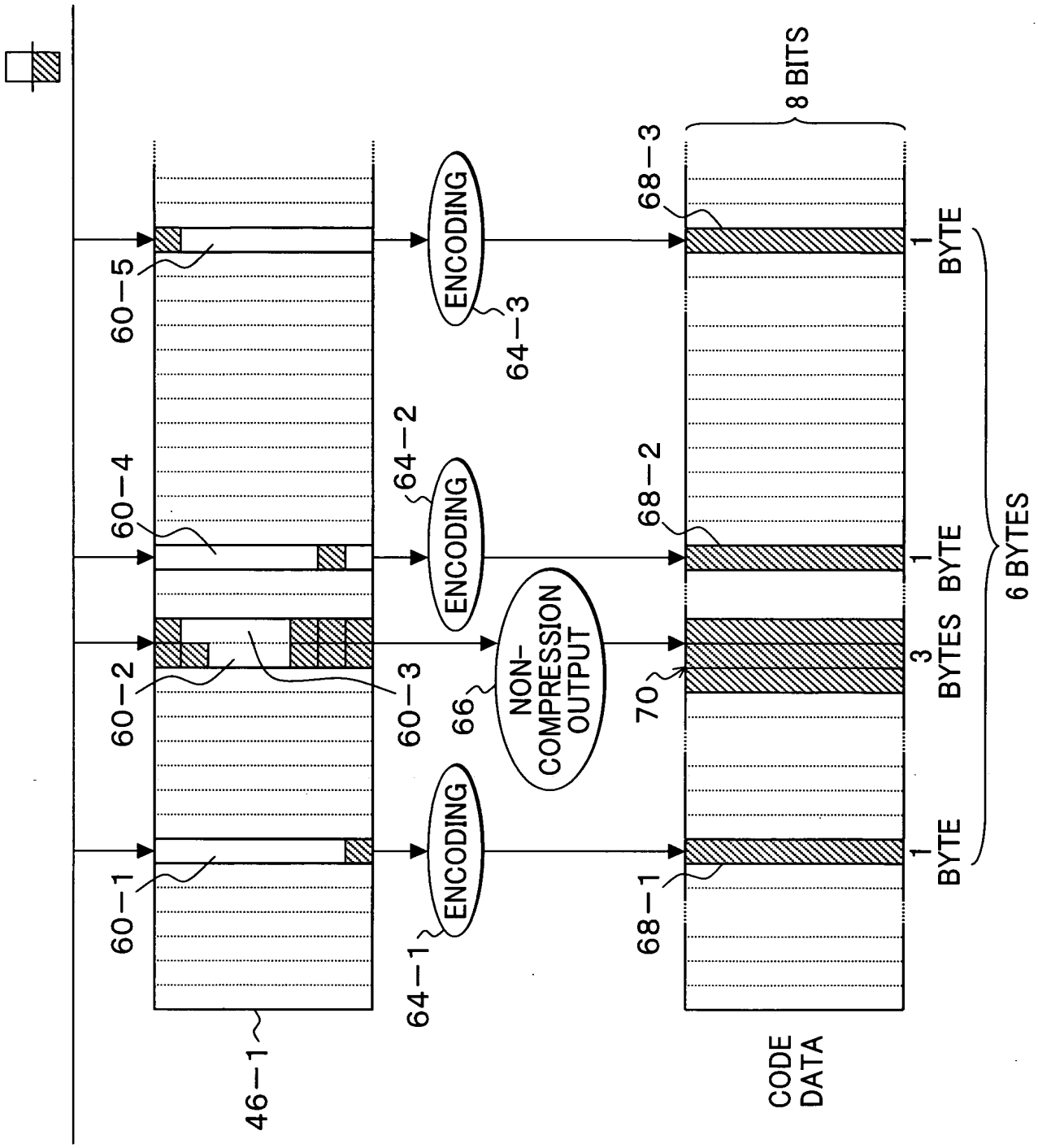

60-5
60-4
60-2
60-1
60-3
46-1
64-3
64-2
64-1
ENCODING
ENCODING
ENCODING
66
NON-
COMPRESSION
OUTPUT
70
68-3
68-2
68-1
8 BITS
1
BYTE
1
BYTE
3
BYTES
1
BYTE
6 BYTES
CODE
DATA

FIG. 4C

FIG. 4D

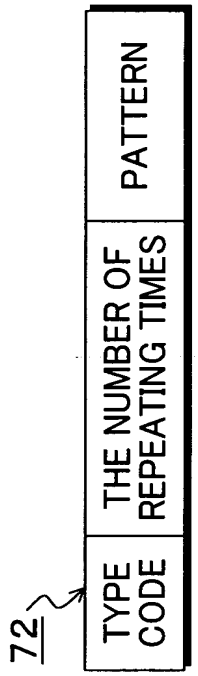


FIG. 5A

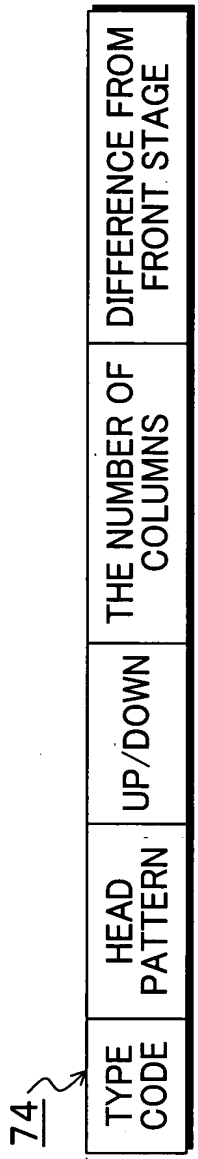


FIG. 5B

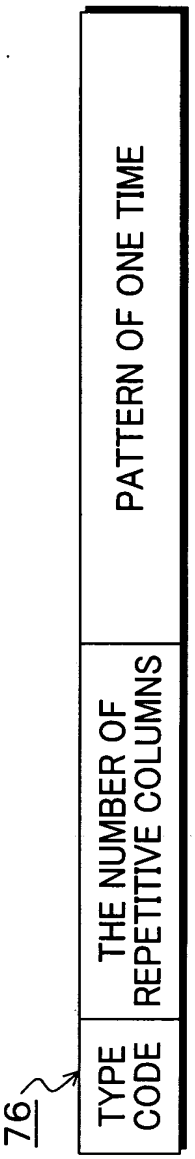


FIG. 5C

FIG. 6

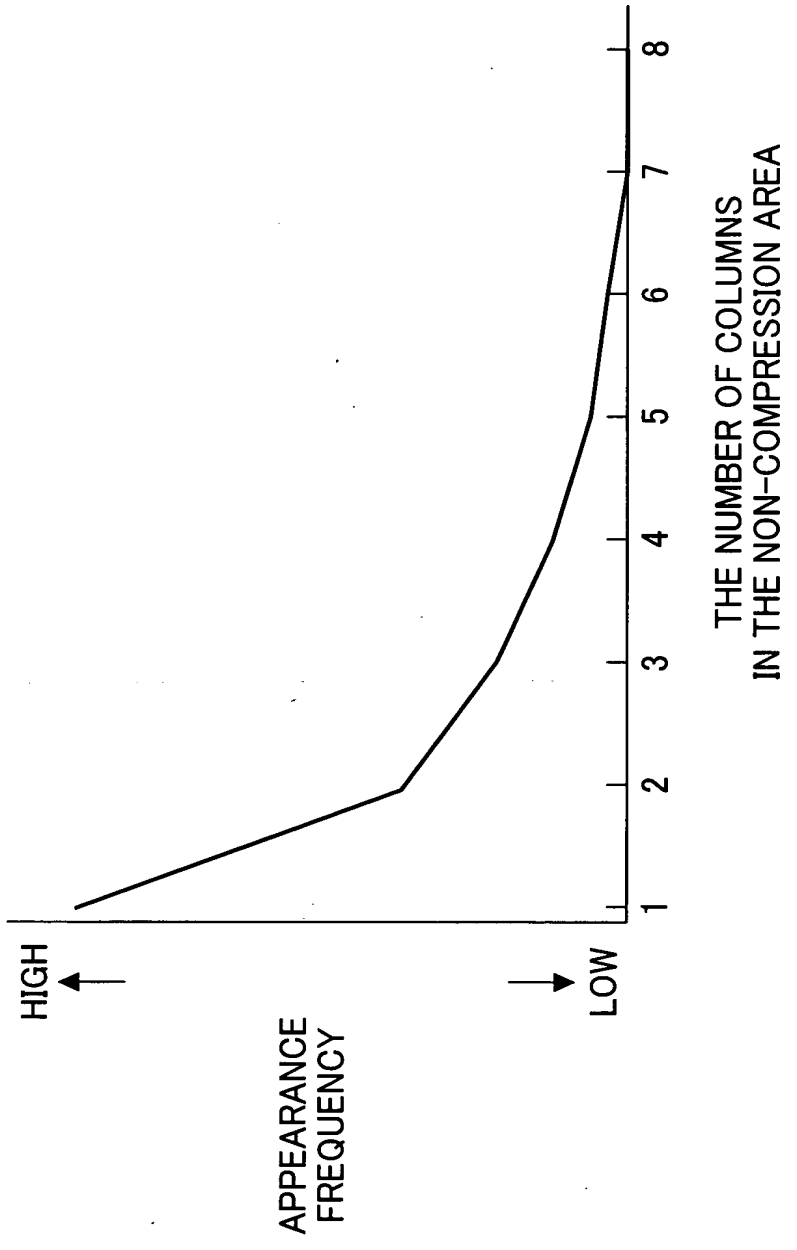

HIGH
LOW
APPEARANCE FREQUENCY
1
2
3
4
5
6
7
8
THE NUMBER OF COLUMNS IN THE NON-COMPRESSION AREA

FIG. 7

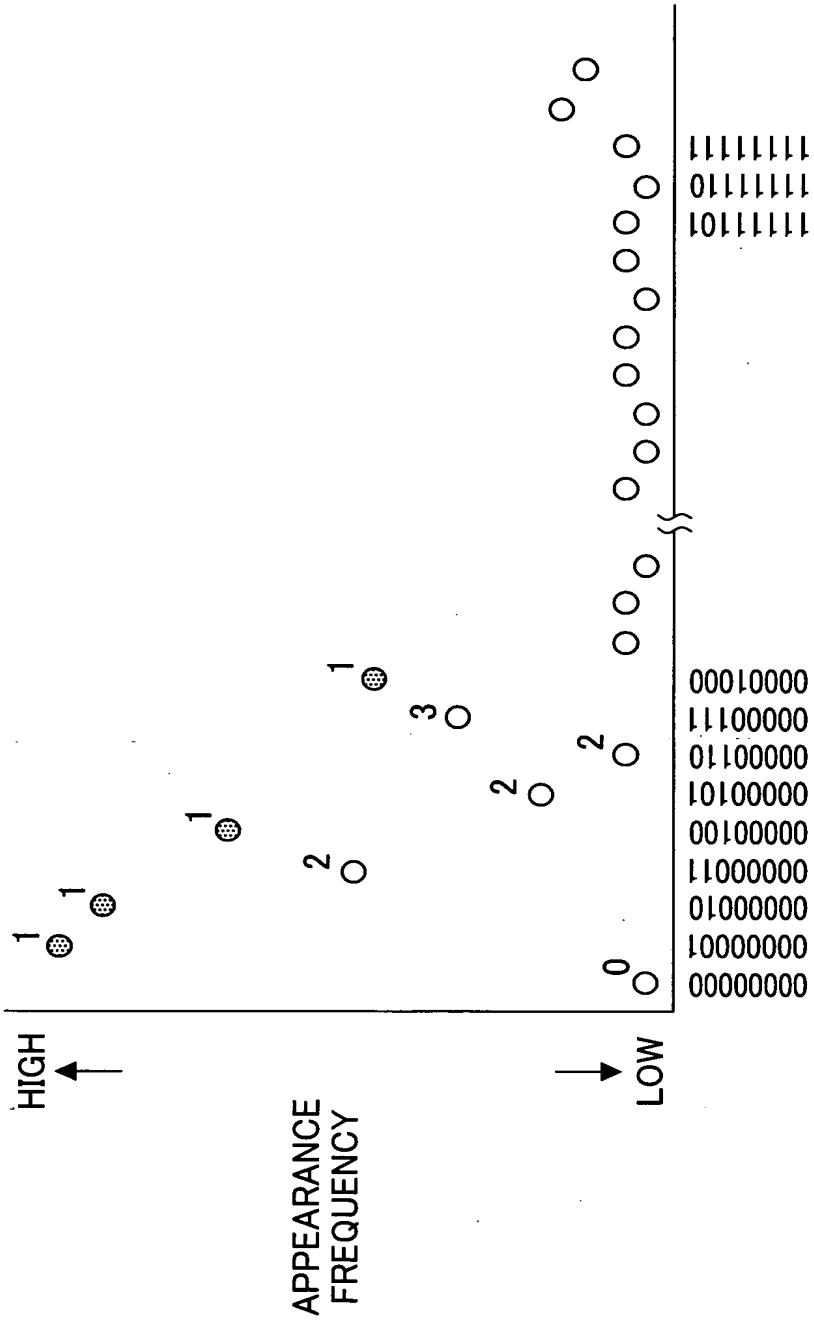

HIGH
LOW
APPEARANCE FREQUENCY
00000000
00000001
00000010
00000011
00000100
00000101
00000110
00000111
00001000
11111101
11111110
11111111
PIXEL VALUE IN THE NON-COMPRESSION AREA OF COLUMN No.1

FIG. 8

30

PATTERN No.	PATTERN
M1	00000001
M2	00000010
M3	00000100
M4	00001000
M5	00000011
M6	00000111
M7	00000101
M8	00000110

FIG. 9

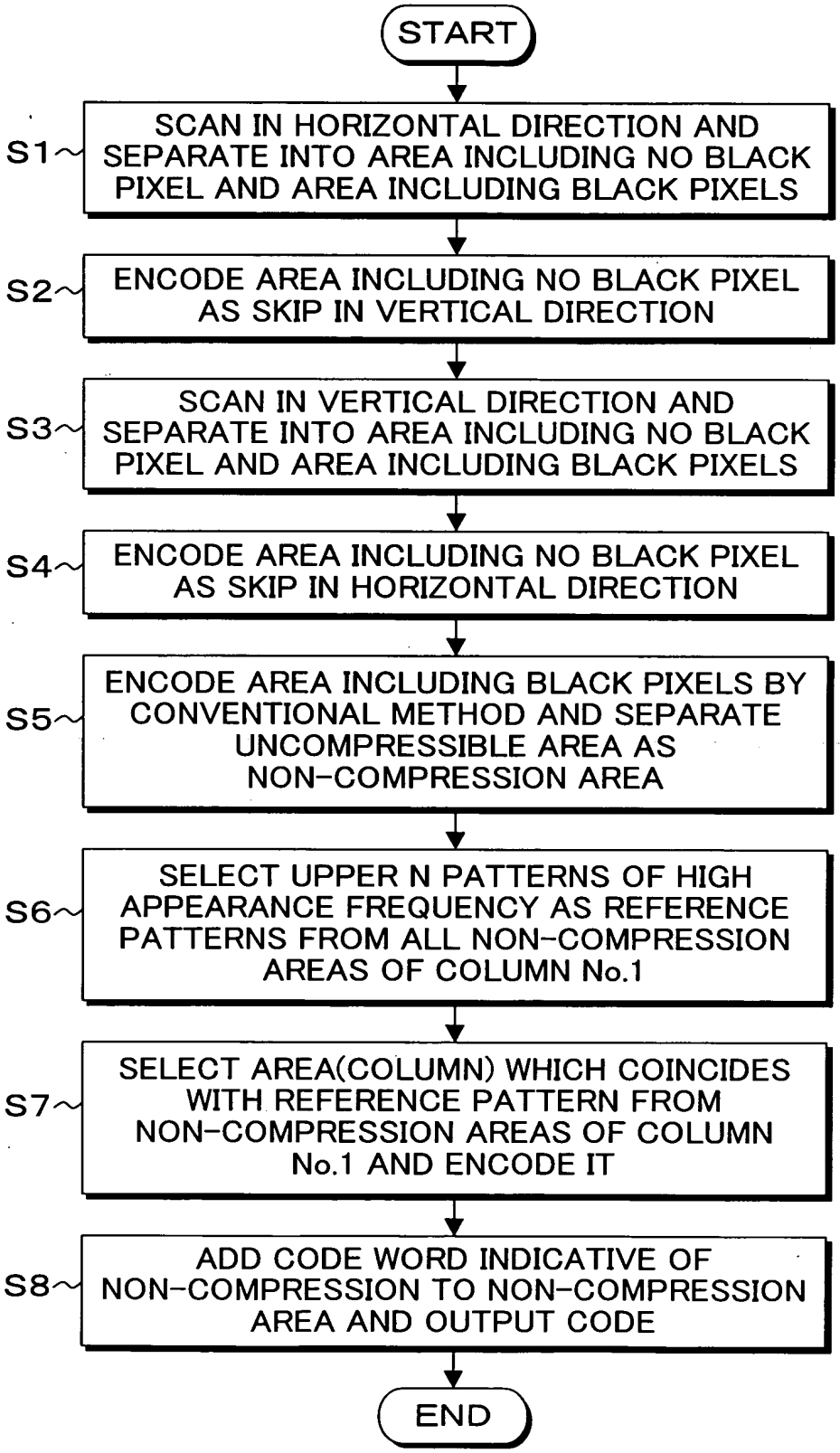

START
S1
SCAN IN HORIZONTAL DIRECTION AND SEPARATE INTO AREA INCLUDING NO BLACK PIXEL AND AREA INCLUDING BLACK PIXELS
S2
ENCODE AREA INCLUDING NO BLACK PIXEL AS SKIP IN VERTICAL DIRECTION
S3
SCAN IN VERTICAL DIRECTION AND SEPARATE INTO AREA INCLUDING NO BLACK PIXEL AND AREA INCLUDING BLACK PIXELS
S4
ENCODE AREA INCLUDING NO BLACK PIXEL AS SKIP IN HORIZONTAL DIRECTION
S5
ENCODE AREA INCLUDING BLACK PIXELS BY CONVENTIONAL METHOD AND SEPARATE UNCOMPRESSIBLE AREA AS NON-COMPRESSION AREA
S6
SELECT UPPER N PATTERNS OF HIGH APPEARANCE FREQUENCY AS REFERENCE PATTERNS FROM ALL NON-COMPRESSION AREAS OF COLUMN No.1
S7
SELECT AREA(COLUMN) WHICH COINCIDES WITH REFERENCE PATTERN FROM NON-COMPRESSION AREAS OF COLUMN No.1 AND ENCODE IT
S8
ADD CODE WORD INDICATIVE OF NON-COMPRESSION TO NON-COMPRESSION AREA AND OUTPUT CODE
END

FIG. 10

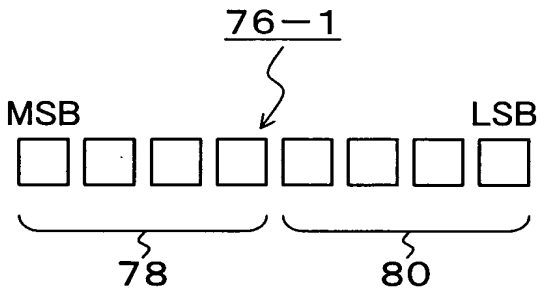


FIG. 11

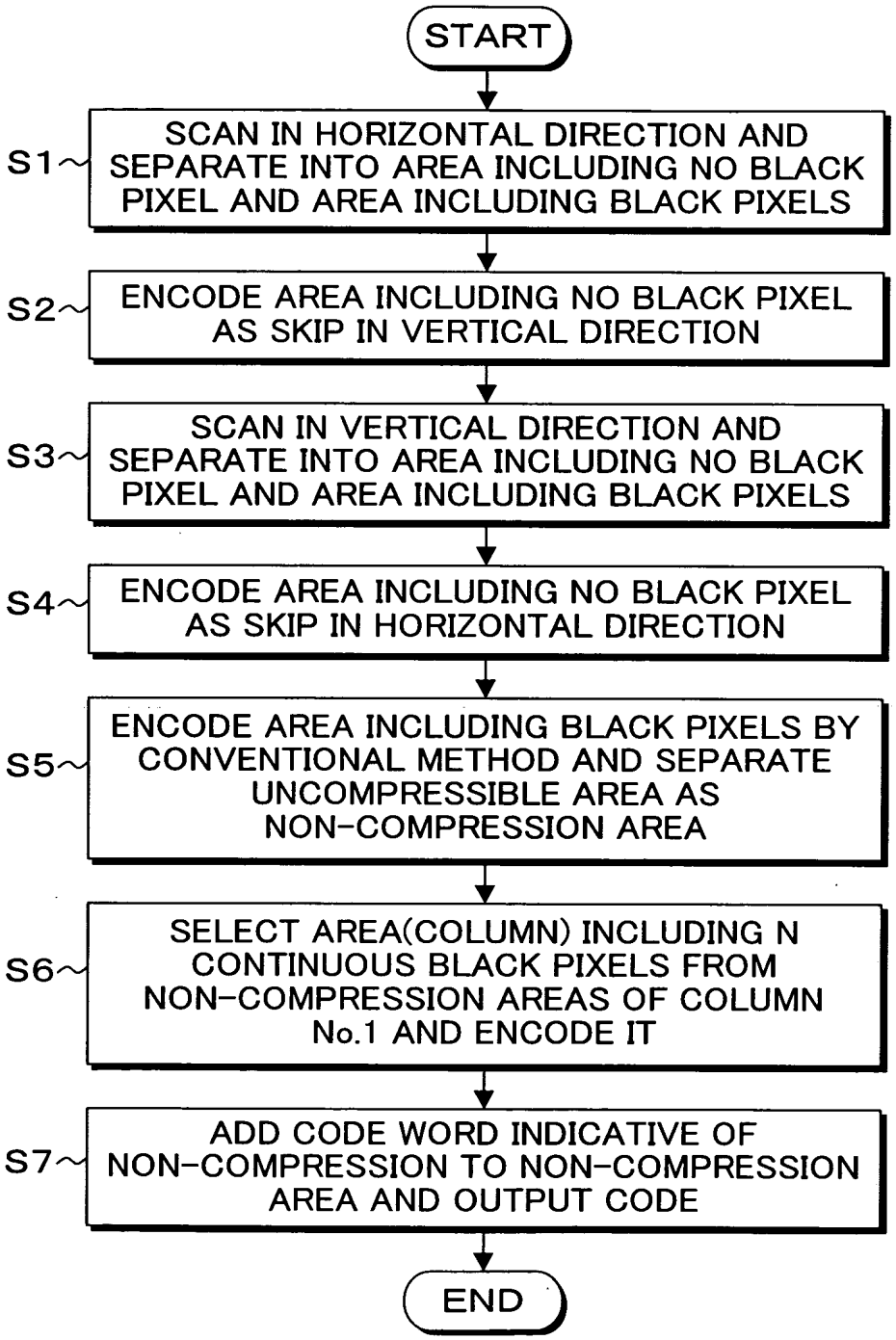

START
S1
SCAN IN HORIZONTAL DIRECTION AND SEPARATE INTO AREA INCLUDING NO BLACK PIXEL AND AREA INCLUDING BLACK PIXELS
S2
ENCODE AREA INCLUDING NO BLACK PIXEL AS SKIP IN VERTICAL DIRECTION
S3
SCAN IN VERTICAL DIRECTION AND SEPARATE INTO AREA INCLUDING NO BLACK PIXEL AND AREA INCLUDING BLACK PIXELS
S4
ENCODE AREA INCLUDING NO BLACK PIXEL AS SKIP IN HORIZONTAL DIRECTION
S5
ENCODE AREA INCLUDING BLACK PIXELS BY CONVENTIONAL METHOD AND SEPARATE UNCOMPRESSIBLE AREA AS NON-COMPRESSION AREA
S6
SELECT AREA(COLUMN) INCLUDING N CONTINUOUS BLACK PIXELS FROM NON-COMPRESSION AREAS OF COLUMN No.1 AND ENCODE IT
S7
ADD CODE WORD INDICATIVE OF NON-COMPRESSION TO NON-COMPRESSION AREA AND OUTPUT CODE
END

FIG. 12

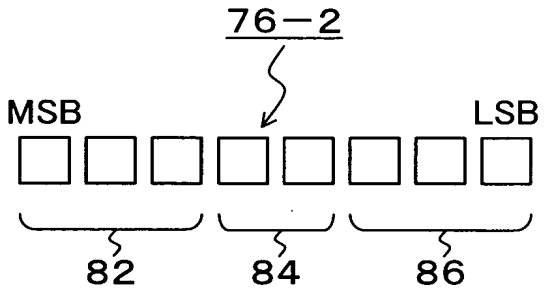


FIG. 13A

N=0
(THE NUMBER OF BLACK PIXELS=1)

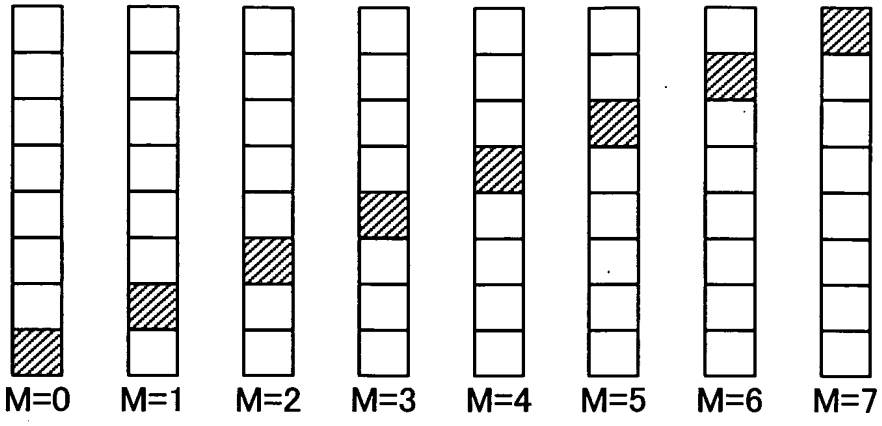


FIG. 13B

N=1
(THE NUMBER OF BLACK PIXELS=2)

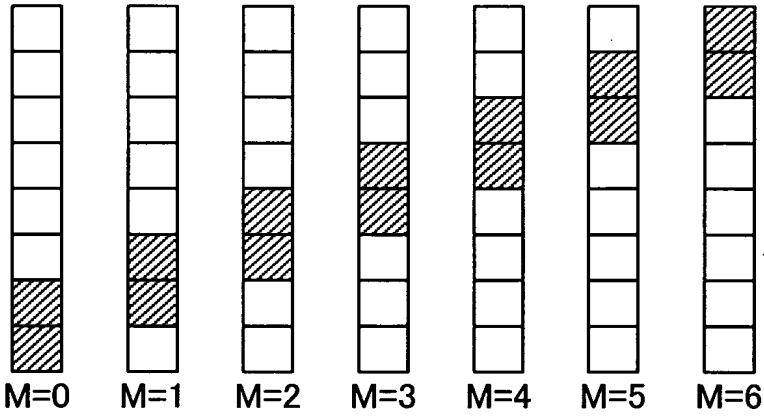


FIG. 13C

N=2
(THE NUMBER OF BLACK PIXELS=3)

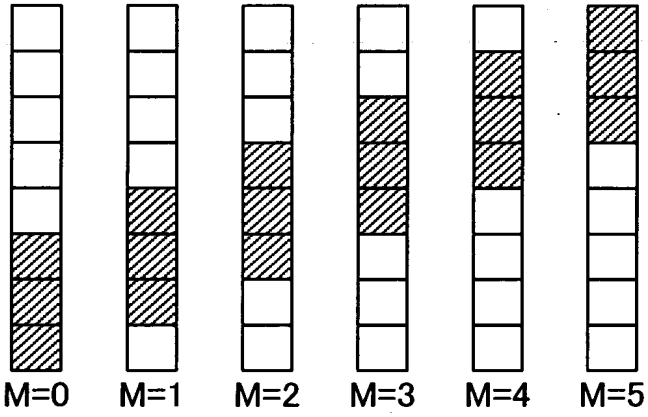


FIG. 13D

N=3
(THE NUMBER OF BLACK PIXELS=4)

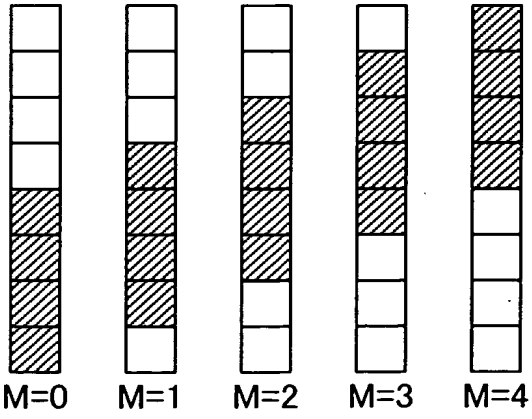


FIG. 14

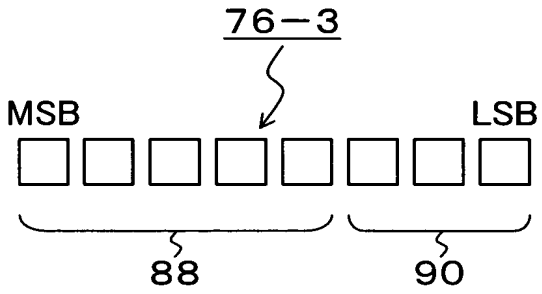


FIG. 15

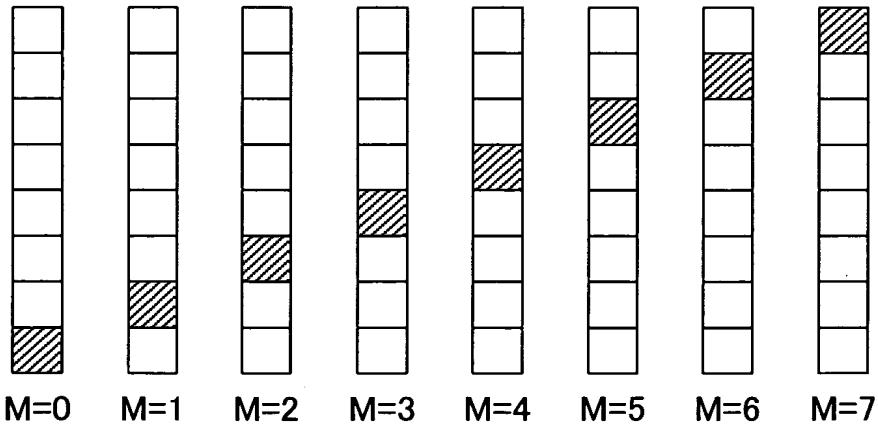


FIG. 16A

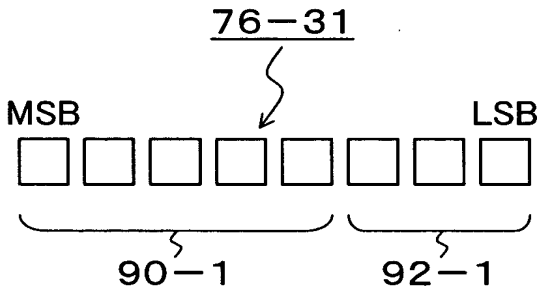


FIG. 16B

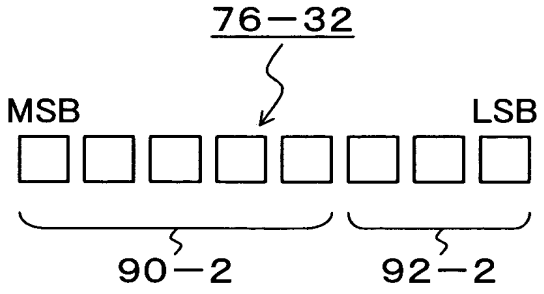


FIG. 17A

THE NUMBER OF BLACK PIXELS=1

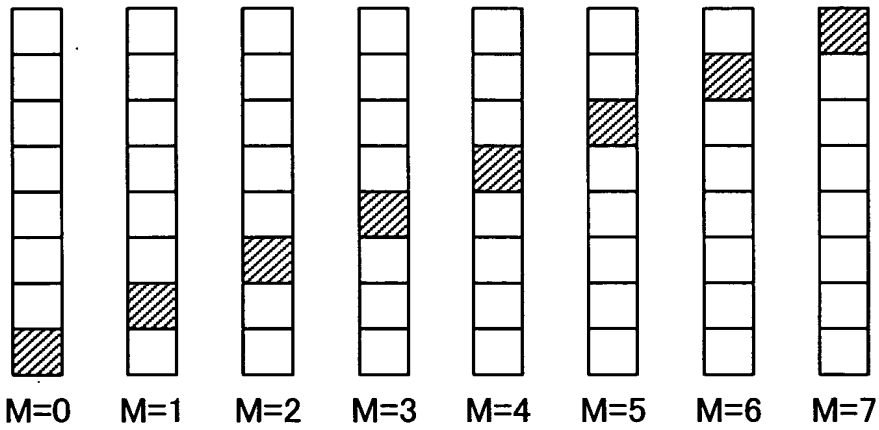
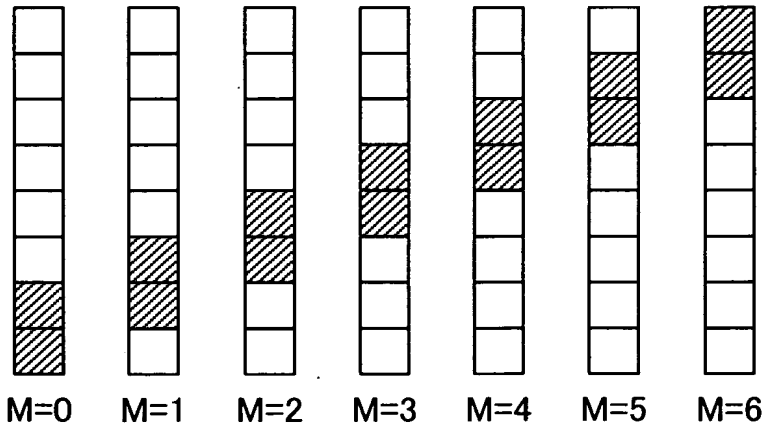


FIG. 17B

THE NUMBER OF BLACK PIXELS=2